

Claims

1. A balancing device for a suspended element (6), particularly for sash doors and windows to be vertically translated, comprising a shaft (12) rotatably supported on a support (15,1,2,5), a pair of opposing pulleys (10) attached to the shaft (12) so as to be rotatable therewith, a pair of supporting ropes (8), one end of each of which being attached to the suspended element (6), and the respective other ends being attached to the pulleys (10), wherein each of the pulleys (10) comprises a spiral groove (10C) onto which the respective ropes (8) can be rolled for translating the suspended element (6), characterized by said shaft (12) being linked to an end (22A) of elastic means (22) whose opposite end (22B) is attached to a friction disc (30) that is rotatably supported on said support (15, 1, 2, 5) and can be blocked against the support (15, 1, 2, 5) so as to allow the adjustment of the torsion load caused by the simultaneous rotation of the pulleys (10) and the shaft (12).
2. The device of claim 1, characterized in that the elastic means (22) are spring means (22) that are arranged co-axially with the shaft (12).
3. The device of claim 2, characterized in that the opposite end (22B) of the spring means (22) is free and independent with respect to the shaft (12).

4. The device of any of claims 1 – 3, characterized in that the friction disc (30) is provided with an inclined head surface (32) that is able to be rotated against a corresponding head surface (42) of an opposing friction disc (40) so as to exert an axial pressure on the friction disc (30), for blocking same against the support (15, 1, 2, 5).
5. The device of claim 4, characterized in that at least one friction ring (53, 54) is provided so as to increase friction between the friction discs (30, 40) and the support (15, 1, 2, 5).
6. The device of claim 5, characterized in that the opposing friction disc (40) is rotatable supported on a bush (50), said bush (50) being supported on the shaft (12) so as to be axially displaceable with respect to the support (15, 1, 2, 5), and comprising a shoulder (52), one (54) of the friction rings (53, 54) being arranged between the shoulder (52) and the opposing friction disc (40).
7. The device of claim 6, characterized in that another friction ring (53) is arranged between the shoulder (52) and the support (15, 1, 2, 5).
8. The device of any of claims 1 – 7, characterized in that the blocking of the friction disc (30) against the support (15, 1, 2, 5) leads to blocking of the rotation also of the end (22B) of the spring means (22), whose opposite end (22A) is engaged in the rotation of the

shaft (12) put in rotation by the pulleys (10), every time the suspended element (6) is vertically moved.

9. The device of any of claims 1 to 8, characterized in that the blocking or loosening, in particular of the friction disc (30), by means of the rotation of the friction disc (40) allows the adjustment of the torsion load required to be provided by the spring means (22) to balance the weight of the suspended element (6), in any phase of the positioning of the suspended element (6) along its vertical translation.
10. The device of any of claims 1 to 9, characterized in that the spring means (22) is twined around a drum (20) so as to provide present a larger wider development surface for the spring means (22).